

Ocean gales and storms, February, 1927—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH PACIFIC OCEAN													
Las Vegas, Am. S. S.	Pacific coast.	Yokohama.	51, 11 N.	170 30 W.	Jan. 30.	4a., 30.	Feb. 2.	28.69	W.	SW., —	WSW.	—, 9.	SSW.-WSW.
Pawlet, Am. S. S.	Manila.	San Francisco.	42 00 N.	138 00 W.	Feb. 1.	2a., 2.	2.	29.18	SSE.	S., 11.	W.	S., 11.	4 pts.
Waitemata, Br. S. S.	Westport, N. Z.	Vancouver.	39 00 N.	135 54 W.	1.	4a., 2.	3.	29.15	S.	S., 8.	W.	W., 9.	S.-WNW.
Grootendijk, Du. S. S.	Portland.	San Francisco.	42 19 N.	124 44 W.	1.	8p., 2.	3.	29.58	SSW.	SSE., 9.	SW.	SSE., 9.	S.-SSE.
Kaisho Maru, Jap. S. S.	Muroran.	William Head, B. C.	49 41 N.	132 49 W.	1.	3a., 1.	3.	28.83	NE.	NW., 5.	S.	S., 9.	
Makiki, Am. S. S.	Seattle.	Honolulu.	39 32 N.	138 47 W.	2.	1a., 2.	2.	28.00	SW.	W., 9.	W.	W., 9.	SW.-W.
Steel Exporter, Am. S. S.	San Francisco.	do.	34 20 N.	133 20 W.	4.	5a., 5.	5.	29.62	S.	S., 7.	NNW.	S., 8.	
Pres. Jefferson, Am. S. S.	Seattle.	Yokohama.	52 00 N.	167 10 W.	5.	2a., 6.	6.	28.55	E.	N., 9.	NNW.	N., 9.	E.-NE.-N.
West Carmona, Am. S. S.	Hongkong.	San Francisco.	38 07 N.	172 27 E.	5.	12 M., 5.	6.	29.67	W.	WNW., 7.	WNW.	WNW., 9.	Steady.
Dilworth, Am. S. S.	Cebu, P. I.	Portland.	50 40 N.	152 00 W.	5.	6p., 5.	6.	28.95	ESE.	SE., 9.	SSW.	SE., 9.	ESE.-SE.
West Prospect, Am. S. S.	San Francisco.	Yokohama.	31 30 N.	159 40 E.	6.	6p., 6.	7.	29.57	SW.	SW., 8.	W.	W., 11.	SW.-W.
Bengal Maru, Jap. S. S.	Yokohama.	San Francisco.	36 30 N.	157 45 E.	6.	11p., 7.	8.	28.90	SE.	W., 9.	NW.	NW., 10.	W.-NW.
West Carmona, Am. S. S.	Hongkong.	do.	37 50 N.	175 12 W.	7.	11a., 7.	7.	28.93	NW.	W., 2.	N.	N., 9.	W.-NW.
H. T. Harper, Am. S. S.	Richmond, Calif.	Honolulu.	28 47 N.	146 00 W.	8.	5a., 10.	10.	29.68	SE.	SSE.—	NW.	SSE., 12.	SSE.-WNW.
Emp. of Canada, Br. S. S.	Yokohama.	Vancouver.	50 57 N.	155 04 W.	8.	8a., 10.	11.	29.12	SE.	SE., 7.	S.	E., 9.	SE.-ESE.
Pres. Wilson, Am. S. S.	Honolulu.	Kobe.	29 00 N.	176 23 W.	8.	3p., 9.	12.	29.75	SW.	WNW., 10.	W.	WNW., 10.	W.-NW.
Kiyo Maru, Jap. S. S.	Yokohama.	San Pedro.	40 01 N.	159 00 W.	10.	2a., 10.	10.	28.17	W.	W., 7.	W.	W., 10.	W.-WSW.
Koyu Maru, Jap. S. S.	Miike.	Grays Harbor.	50 35 N.	154 35 W.	10.	Noon, 11.	13.	28.04	E.	ESE., 8.	SE.	ESE., 9.	
Frank G. Drum, Am. S. S.	Gaviota.	Honolulu.	25 22 N.	148 57 W.	10.	6a., 10.	12.	29.72	SSE.	SW., —	NW.	NW., 10.	SW.-NW.
Robin Adair, Am. S. S.	San Francisco.	do.	34 20 N.	131 45 W.	12.	6p., 13.	17.	29.29	SSE.	SW., 10.	SW.	SW., 10.	S.-SW.
Kongoson Maru, Jap. S. S.	Yokohama.	San Francisco.	38 45 N.	154 45 E.	14.	4p., 14.	15.	29.76	W.	WNW., 10.	NW.	WNW., 11.	W.-WNW.
Do.	do.	do.	42 00 N.	165 30 E.	16.	8a., 17.	17.	29.32	E.	ENE., 10.	ENE.	ENE., 10.	E.-ENE.
Manukai, Am. S. S.	Honolulu.	do.	32 40 N.	134 30 W.	15.	Noon, 15.	15.	29.39	S.	S., 8.	S.	S., 8.	Steady.
Memphis City, Am. S. S.	San Pedro.	Yokohama.	30 57 N.	133 00 W.	13.	1p., 13.	17.	29.60	W.	W., —	WNW.	W., 10.	
Canad. Seigneur, Br. S. S.	Vancouver.	Baiboa.	37 05 N.	123 12 W.	15.	Mid., 15.	16.	29.48	SE.	SE., 7.	S.	SSW., 8.	SE.-SSW.
Pres. Wilson, Am. S. S.	Honolulu.	Kobe.	32 40 N.	167 00 E.	13.	6p., 13.	16.	29.82	WNW.	WNW., 8.	NNE.	NW., 11.	WNW.-NW.
Manulani, Am. S. S.	San Francisco.	Honolulu.	29 39 N.	143 35 W.	16.	2p., 16.	17.	29.60	S.	S., 7.	W.	W., 9.	S.-SSW.
Bengal Maru, Jap. S. S.	Yokohama.	San Francisco.	39 05 N.	152 00 W.	17.	2a., 17.	18.	28.74	SSW.	S., 11.	WSW.	SW., 11.	S.-SW.-W.
West Chopaka, Am. S. S.	Hondagua.	do.	44 23 N.	147 55 W.	16.	7a., 18.	18.	28.37	W.	SW., 10.	NNW.	SW., 11.	Steady.
Oridono Maru, Jap. S. S.	Miike.	Grays Harbor.	48 14 N.	135 30 W.	18.	4a., 20.	20.	28.29	ENE.	SW., 8.	WSW.	SW., 8.	S.-SW.
Unkia Maru, Jap. S. S.	Muroran.	Portland.	44 20 N.	158 38 E.	23.	6a., 24.	24.	28.38	E.	ENE., 9.	N.	ENE., 9.	E.-N.
Kongoson Maru, Jap. S. S.	Yokohama.	San Francisco.	44 25 N.	146 15 W.	23.	4p., 24.	25.	29.20	NW.	NW., 8.	W.	SSW., 10.	NW.-W.
West Ivan, Am. S. S.	Hongkong.	do.	39 00 N.	177 00 W.	25.	11a., 25.	25.	29.44	W.	W., 8.	SW.	W., 8.	4 pts.
Havre Maru, Jap. S. S.	Muroran.	Tacoma.	49 57 N.	143 10 W.	24.	6a., 24.	25.	28.57	E.	SSE., 9.	SW.	SSE., 9.	6 pts.
City of Spokane, Am. S. S.	Yokohama.	Seattle.	49 46 N.	137 55 W.	24.	3p., 24.	26.	28.74	SE.	SE., 9.	SE.	SE., 10.	SE.-WSW.
Cuprum, Am. S. S.	do.	Puget Sound.	50 00 N.	146 00 W.	24.	10a., 24.	26.	28.82	SW.	W., 5.	W.	SE., 10.	
Yankee Arrow, Am. S. S.	Hongkong.	Los Angeles.	36 38 N.	161 43 E.	26.	8a., 27.	27.	29.42	SSE.	SW., 6.	W.	SE., 9.	SW.-W.
Harold Dollar, Br. S. S.	Karatsu.	San Francisco.	42 30 N.	155 00 E.	27.	3p., 28.	28.	28.99	W.	W., 9.	W.	W., 9.	Steady.
SOUTH ATLANTIC OCEAN													
Stakesby, Br. S. S.	Gulfport.	River Plate.	31 15 S.	49 50 W.	1.	3a., 2.	3.	29.50	NE.	S., 9.	S.	S., 10.	NW.-S.
Alchiba, Du. S. S.	Rotterdam.	Rosario.	28 30 S.	46 07 W.	2.	4p., 2.	4.	29.53	SW.	SW., 8.	SW.	SW., 8.	NW.-SW.

NORTH PACIFIC OCEAN

By WILLIS E. HURD

The average of the daily barometric readings for the month over the eastern half of the North Pacific Ocean shows a sharp fall in pressure since January, when the minimum in the Aleutian area was 29.53 inches, occurring at St. Paul. The point of lowest February pressure was at Dutch Harbor, its average of 29.19 inches being the lowest for that month in recent years, although that for February, 1926, was only 0.01 inch higher. The highest daily reading at Dutch Harbor for February of this year was very low for a maximum, only 29.92 inches. The fact that the pressure was below normal from the Arctic Ocean to the Hawaiian Islands and thence eastward to a little south of San Francisco shows that the Aleutian

Low was unusually deep and extensive and that for the most part it dominated the weather of the upper two-thirds of the eastern part of the ocean, beside forcing the usual northern limit of the northeast trade winds considerably to the southward.

The North Pacific HIGH, as a consequence of the overdevelopment and extent of the LOW, was at several times during the month practically nonexistent except as a narrow belt extending along low latitudes. From the 6th to the 12th it covered the usual area between Hawaii and the American continent and even extended well up along the Alaskan coast, but it was not otherwise well developed until near the end of the month when, for the first time in any great measure, the LOW retreated and the HIGH covered the major part of the ocean east of the 180th meridian.

The following table gives the most important pressure data at several island and coast stations in west longitudes:

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean, February, 1927

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Dutch Harbor ¹	29.19	-0.43	29.92	28th.....	28.58	6th.....
St. Paul ¹	29.36	-0.30	30.04	28th.....	28.80	9th.....
Kodiak ¹	29.27	-0.43	29.98	10th.....	28.42	25th.....
Midway Island ¹	29.93	-0.10	30.22	27th.....	29.68	13th.....
Honolulu ¹	30.04	-0.01	30.22	18th.....	29.80	16th.....
Juneau ¹	29.70	-0.22	30.37	11th.....	28.72	20th.....
Tatoosh Island ¹	29.83	-0.15	30.40	9th.....	29.15	20th.....
San Francisco ²	30.03	-0.04	30.31	19th.....	29.43	16th.....
San Diego ²	30.06	+0.02	30.29	18th.....	29.81	11th.....

¹ P. m. observations only.

² A. m. and p. m. observations.

³ Corrected to 24-hour mean.

Previous reports have shown that December and January of the present winter were very stormy months over most of the ocean. February was also stormy over the eastern half of the sea, but over the western half gales were considerably less frequent, although a number of days had winds of force 10, and three, so far as known, of force 11. These were the 6th, 13th, and 14th, and the area of gales was roughly bounded by 30° and 40° N., 150° and 170° E. Those of the 6th accompanied the eastward movement of a cyclone which originated as a shallow Low northeast of Taiwan on the 3d and proceeded oceanward for a time with increasing intensity. Those of the 13th and 14th blew off the southeastern slope of a great anticyclone which, spreading eastward from the continent, lay on these dates south and east of Japan. Lesser gales blew in the same neighborhood from the 5th to the 10th, the 15th to the 17th, and scattering from the 22d to the 28th.

A number of small low-pressure areas came out of Siberia this month, and though generally mild they caused frequent local snows over the Japanese Archipelago and much squally weather over the seas. A few shallow depressions left China, although this area was for the most part covered with successively passing anticyclones, and apparently the only gales on the coast were those of the northeast monsoon, which occurred on several days and were especially strong in the Taiwan Channel. The strongest wind reported locally in Asiatic waters was the result of a Low in the upper Japan Sea. Here a westerly gale of force 10 was encountered in Tsugaru Strait on the 9th by the French steamer *Yalou*.

Owing to the great southward extension of the Aleutian Low and to the formation of secondaries within it in middle latitudes, gales were frequent between 160° west longitude and North America. Here velocities rising to whole gale or hurricane force were experienced by vessels on the 2d, 10th, 17th, and 18th. Those of the 2d resulted from a local intensification of storm conditions near 42° N., 138° W., in which the American steamer

Pawlet experienced the highest reported wind, a south gale of force 11. About the 8th or 9th a secondary Low formed near 40° N., 160° W. In its progress eastward it caused strong gales on the 10th to 12th near 30° N., 145° W., the maximum being a south-southeast hurricane on the 10th. Other moderate gales attended its movement between 135° and 130° W. on the 13th to 15th. The storm winds of the 17th and 18th were encountered about midway on a nearly straight line between Juneau and Honolulu.

During much of February the weather of Midway Island was strongly influenced by the northern Low. The average pressure because of it was only 29.93 inches, whereas the normal is 0.10 inch higher. The wind was active here, as also during January, and gales of force 9 to 10 occurred on the island or in the neighborhood, as shown by reports, on the 7th to 9th.

Most of the west-longitude gales of the latter part of February occurred in middle or higher latitudes after the disappearance of the secondary cyclones and following upon the general retreat northward of the Aleutian Low. The Weather Bureau station at Point Reyes, Calif., reported a 76-mile wind on the 16th, and at the Tatoosh Island station velocities equaling or exceeding 60 miles an hour occurred as follows: 3d, 65 miles; 5th, 62; 18th, 60; 20th, 77 (from the southwest); 24th, 64.

At Honolulu the weather continued dry, with abnormally high temperatures. The total precipitation was 1.74 inches, which is 2.01 less than the normal. The prevailing wind direction was northeast, and the average velocity was 7.8 miles. The maximum velocity was at the rate of 35 miles an hour from the southwest on the 14th.

Contrary to the condition of dryness over the Hawaiian Islands, frequent and heavy rains occurred east of them, especially toward the California coast and thence inland. At San Diego precipitation continued from the 10th to the 16th, resulting at first from a depression which lay over northwestern Mexico and southern California and later from the Low that was sweeping in from the Pacific. Rainfall at both San Diego and San Francisco was about double the normal for February.

Fog, as in February of last year, was rare except along the American coast, and there principally between about 30° and 40° N., where it was observed on about 50 per cent of the days. At Juneau there was fog on the 6th, 7th, 10th, 11th, and 12th. Occasional fog occurred early in the month at scattered places in west longitudes, and was reported on the 5th and 6th by a vessel in Yokohama Harbor. Except for the Japanese coast there is no record at hand of its observance between 140° E. and 160° W.

NOTES

American steamer *President Jackson*, Yokohama to Seattle, February 14-23, 1927.—Except for snow, rain, and mist squalls, "this passage was marked by exceptional weather conditions for February. Practically smooth all the way, and only light breezes."
American steamer *President Madison*, Yokohama to Seattle, February 2-10, 1927.—"In latitude 38° N., longitude 145° 30' E., weather set in with occasional snow and heavy hail squalls, which continued every day the same to latitude 50° N., longitude 161° 30' W.," then steady fog and thick mist.